

Docket No.: HI-0029

PATENT

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF APPEALS AND INTERFERENCES

Application of

Confirmation No.: 7722

Keun Ok LIM

Group Art Unit: 2655

Serial No.: 09/729,768

Examiner: Michael N. OPSASNICK

Filed: 12/6/2000

Customer No.: 34610

For: METHOD FOR INCREASING RECOGNITION RATE IN VOICE
RECOGNITION SYSTEM

TRANSMITTAL OF APPEAL BRIEF

U.S. Patent and Trademark Office
Customer Window, Mail Stop Appeal Brief-Patents
Randolph Building
401 Dulany Street
Alexandria, Virginia 22314

Sir:

Submitted herewith is Appellant's Appeal Brief in support of the Notice of Appeal filed July 7, 2005. Enclosed is Check No. ~~15792~~ for the Appeal Brief fee of \$500.00.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 16-0607 and please credit any excess fees to such deposit account.

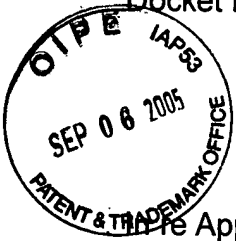
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Date: September 6, 2005

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For: **METHOD FOR INCREASING RECOGNITION RATE IN VOICE RECOGNITION
SYSTEM**

APPEAL BRIEF

U.S. Patent and Trademark Office
Customer Window, Mail Stop Appeal Brief-Patents
Randolph Building
401 Dulany Street
Alexandria, Virginia 223134

Sir:

This appeal is taken from the final rejection of claims 1-5, 7-16 and 18-27 as set forth in the final Office Action of February 7, 2005 (hereinafter the Office Action). In accordance with 37 C.F.R. §41.37, applicant addresses the following items.

REAL PARTY IN INTEREST

The party in interest is the assignee, LG Electronics Inc. An assignment document is recorded at Reel 011362 and Frame 0063.

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RELATED APPEALS AND INTERFERENCES

There are no known related appeals and/or interferences.

STATUS OF THE CLAIMS

Claims 1-5, 7-16 and 18-27 are pending in this application. All claims are rejected. All claims are being appealed.

STATUS OF AMENDMENTS

The Amendment filed June 7, 2005 has been entered (as set forth in the Advisory Action dated July 7, 2005). Thus, all amendments filed in this application have been entered. A copy of appealed claims 1-5, 7-16 and 18-27, including all entered amendments thereto, appears in the attached Appendix.

SUMMARY OF CLAIMED SUBJECT MATTER

As stated in 37 C.F.R §41.37(c) (v), applicant is providing the following explanation of each of the independent claims 1, 3, 7 and 24 involved in this appeal. This explanation refers to the specification and drawings. The following is merely a summary and is not intended to be a discussion of the full and entire scope of the claims.

Independent Claim 1

Independent claim 1 relates to a method for increasing voice recognition rate in a voice recognition system. The method may include establishing a reference model for user

voices subjected to recognition. For example, page 5, lines 19-22 relates to a voice recognition processing unit 204 (FIG. 2) for obtaining reference voice models. The method may also include receiving the user voices for voice recognition commands. For example, FIG. 3 shows step S201 in which a user voice corresponding to a specific command is entered. See page 7, lines 7-10. FIG. 2 further shows a microphone 201 for receiving voice signals for recognition of user voices. See page 5, lines 5-12 and 23-25.

The method may also include detecting the range and characteristics of the received voice data and comparing the range and characteristics of the detected voice data with the characteristics of the previously obtained reference voice model to retrieve a word having the largest similarity. For example, FIG. 3 shows steps S202, S204 and S205 in which features are shown relating to finding whether the range and characteristics of the voice data are successful, and when they are successful, characteristics are compared and a word having the largest similarity is recognized. See page 7, lines 11-17; page 5, lines 19-22 and page 5, line 25-page 6, line 4.

Independent claim 1 further relates to comparing the similarity of the retrieved word with the similarity reference value to report a voice recognition failure when the compared result is below the reference value. For example, FIG. 3 shows step S206a in which when the similarity is below a similarity reference value, then a message may be displayed to the user to report that the recognition failed due to nonexistence of registered words or incorrect pronunciation. See page 8, lines 1-3. The LCD 203 (FIG. 2) displays a failure of the voice recognition. See page 5, lines 7-8.

Still further, independent claim 1 relates to comparing the similarity of the retrieved word with the similarity reference value to report a voice recognition success and perform the command corresponding to the recognized word when the compared result is at least the reference value. For example, FIG. 3 shows step S207 in which a recognition success message is displayed and a command corresponding to the currently recognized word is performed. See page 7, lines 23-25 and page 6, line 5-25 (discussing operations being performed relating to voice commands). FIG. 2 also shows an LCD 203 for displaying success of voice recognition and a speaker 203 for outputting success of voice recognition. See page 5, lines 6-8.

Independent claim 1 further recites modifying the reference voice model based on the characteristics of the voice data which succeeded in the voice recognition. For example, FIG. 3 shows step S208 in which the voice data are reflected to modify the reference voice model. See page 8, lines 3-10 and page 6, lines 5-25.

Independent Claim 3

Independent claim 3 relates to a method for increasing voice recognition rate in a voice recognition system. This may include detecting the characteristics of voice data received from a user. The method may also include comparing the detected characteristics with a previously established reference voice model to judge success or failure of the voice detection. For example, page 5, lines 19-22 discusses a voice recognition processing unit 204 (FIG. 2) for obtaining reference voice models. FIG. 3 shows step S201 in which a user voice corresponding to a specific command is entered.

See page 7, lines 7-10. FIG. 2 further shows a microphone 201 for receiving voice signals for recognition of user voices. See page 5, lines 5-12 and 19-25. FIG. 3 additionally shows steps S202, S205 and S205 in which features are shown relating to the range and characteristics of the voice data.

The method may also include performing an operation based on the received voice data and associated with the reference voice model upon success of the voice detection. For example, see page 7, lines 23-25 and page 6, line 5-25 discussing operations being performed relating to voice commands. FIG. 2 also shows an LCD 203 for displaying success or failure of voice recognition and a speaker 202 for outputting success or failure. See page 5, lines 6-8. FIG. 3 additionally shows step S207 in which a recognition success message is displayed and a command corresponding to the currently recognized word is performed.

Independent claim 3 further recites updating the reference voice model using the voice data received from the user upon a judged success of the voice detection. For example, FIG. 3 shows step S208 in which the voice data are reflected to modify the reference voice model. See page 8, lines 3-10 and page 6, lines 5-25.

Independent Claim 7

Independent claim 7 relates to a voice recognition method. This may include comparing voice data from a user with a reference voice model of previously entered voice data. For example, page 5, lines 19-22 relates to a voice recognition processing unit 204 (FIG. 2) for obtaining reference voice models. The method may also include receiving the

user voices for voice recognition commands. For example, FIG. 3 shows step S201 in which a user voice corresponding to a specific command is entered. See page 7, lines 7-10. FIG. 2 further shows a microphone 201 for receiving voice signals for recognition of user voices. See page 5, lines 5-12 and 23-25.

The method may also include determining if the voice data from the user corresponds to the reference voice model. For example, FIG. 3 shows step S202 and S204 in which features are shown relating to finding whether the range and characteristics of the voice data are successful. See page 7, lines 7-17; and page 5, line 25- page 6, line 1.

Still further, the method may include executing a command associated with the reference voice model upon a positive correspondence of the reference voice model and the voice data from the user. For example, FIG. 3 shows step S207 in which a recognition success message is displayed and a command corresponding to the currently recognized word is performed. See page 7, lines 23-25 and page 6, line 5-25 discussing operations being performed relating to voice commands.

Independent claim 7 further recites updating the reference voice model using the voice data from the user, upon the positive correspondence of the reference voice model and the voice data from the user. FIG. 3 shows step S208 in which the voice data are reflected to modify the reference voice model. See page 8, lines 3-10 and page 6, lines 5-25.

Independent Claim 24

Independent claim 24 relates to a voice recognition method. This may include receiving a user voice representative of a voice recognition command. For example, FIG. 3 shows step S201 in which a voice corresponding to a specific command is entered. See page 7, lines 7-10. FIG. 2 further shows a microphone 201 for receiving voice signals for recognition of user voices. See page 5, lines 5-7 and 23-25. Additionally, page 5, lines 19-22 relates to a voice recognition processing unit 204 (FIG. 2) for obtaining reference voice models.

The method may also include detecting characteristics of the received user voice, and comparing the characteristics of the detected user voice with characteristics of a previously obtained reference voice model to retrieve a word having the largest similarity. For example, FIG. 3 shows steps S202, S204 and S205 in which features are shown relating to finding whether the range and characteristics of the voice data are successful, and when they are successful, characteristics are compared and a word having the largest similarity is recognized. See page 7, lines 11-17. Additionally, FIG. 2 shows the voice recognition processing unit 204 to obtain and store reference voice models into a memory. See page 5, lines 19-22 and page 5, line 25-page 6, line 4.

Independent claim 24 further recites performing a command based on the received user voice and corresponding to the retrieved word when the compared result is at least a reference value. For example, FIG. 3 shows step S207 in which a recognition success message is displayed and a command corresponding to the currently recognized word is

performed. See page 7, lines 23-25 and page 6, line 5-25 discussing operations being performed relating to voice commands.

Additionally independent claim 24 recites modifying the reference voice model based on the characteristics of the user voice. For example, FIG. 3 shows step S208 in which the voice data are reflected to modify the reference voice model. See page 8, lines 3-10 and page 6, lines 5-25.

GROUND OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-5, 7-16 and 18-27 stand rejected under 35 U.S.C. §103(a) over U.S. Patent 5,452,397 to Ittycheriah et al. (hereafter Ittycheriah) in view of U.S. Patent 5,167,004 to Netsch et al. (hereafter Netsch). As discussed below in the section entitled "Argument" applicant has separately made arguments for the claims. Applicant believes that each of the claims stands and falls separately from one another.

ARGUMENT

The present application contains four independent claims, namely independent claims 1, 3, 7 and 24. These claims contain different features as may be evidenced by the specifically claimed features and as may be pointed out below. For ease of illustration, similar types of claims (or claim features) may be discussed with respect to each other. This is not an admission that the claims are the same or that they stand or fall together. Rather, this is an attempt to narrow the number of issues and to limit the number of

arguments. While arguments may be similar for different claims, it should be understood that differently claimed features are expressly used. Further, the outstanding Office Action does not separately discuss the claims despite the applicant discussing and explaining differently claimed features.

The Office Action rejects claims 1-5, 7-16 and 18-27 under 35 U.S.C. §103(a) over U.S. Patent 5,452,397 to Ittycheriah in view of Patent 5,167,004 to Netsch. As will be described below, applicant respectfully submits that the combination of Ittycheriah and Netsch is improper and/or that if the combination is made, the combination also does not teach or suggest the claimed features.

Independent Claim 1

Independent claim 1 recites comparing the similarity of the retrieved word with the similarity reference value to report a voice recognition failure when the compared result is below the reference value, and to report a voice recognition success and perform the command corresponding to the recognized word when the compared result is at least the reference value. Independent claim 1 further recites modifying the reference voice model based on the characteristics of the voice data which succeeded in the voice recognition.

Ittycheriah and Netsch do not teach or suggest all of the features of independent claim 1. The Office Action appears to reference Ittycheriah's Figures 3 and 6 and column 6, lines 40-67 for features relating to "comparing the similarity of a retrieved word . . . similarity reference . . . report a voice recognition failure . . . report a voice recognition success . . . reference value". However, Ittycheriah's Figure 3 relates to an update

process and Figure 6 illustrates the system. Furthermore, Ittycheriah's column 6, lines 40-67 relates to various circuitry relating to the vocabulary list. This circuitry may assign probability and/or play a message stating that the first-received phrase is similar to at least one of the other phrases. At no point in these cited sections is there any discussion regarding reporting a voice recognition success and to perform the command corresponding to the recognized word when the compared result is at least the reference value. In other words, the sections cited in Ittycheriah relate to an update process and not to any type of command performance (i.e., perform the command corresponding to the recognized word).

The Advisory Action dated July 7, 2005 states that Ittycheriah teaches executing recognized commands at col. 3, lines 28-35. Ittycheriah does disclose recognizing a voice command and calling a respective person based on the phrase "Call Phrase 1." However, this operation of Ittycheriah is a different mode of operation than Ittycheriah's enroll process (FIG. 2), update process (FIG. 3) and update grammar process (FIG. 4). More specifically, Ittycheriah's col. 5, lines 1-50 specifically relates to a user entering an enrollment process. See col. 5, lines 9-11. Still further, Ittycheriah's col. 5, line 50-col. 6, line 26 relates to user entering an update process in a learning process (i.e., an update grammar process). These enrollment and update processes do not contain any type of command performance. Note that FIGs. 3-5 do not include any type of command performance within those respective modes of operation. Applicant respectfully notes that claim 1 recites "perform the command corresponding to the recognized word when the

compared result is at least the reference value." Thus, performing of the command corresponds to the claimed comparing. Ittycheriah's features at col. 3, lines 28-35 do not relate to "when the compared result is at least the reference value.

The Office Action also states that Ittycheriah does not explicitly teach updating the model after a successful recognition. The Office Action then relies on Netsch's col. 4, lines 64-69 as teaching updating the model after a successful recognition. Netsch does not teach or suggest the features of independent claim 1 missing from Ittycheriah. That is, Netsch does not teach or suggest to report a voice recognition success and to perform the command corresponding to the recognized word when the compared result is at least the reference value. The Office Action also does not rely on Netsch for features regarding to perform a command.

The Office Action in addressing independent claim 1 does not address the features of claim 1 relating to "to report a voice recognition success and perform the command corresponding to the recognized word when the compared result is at least the reference value." The Office Action appears to state on the bottom of page 4 that the block 42 (FIG. 3) corresponds to both a failure condition and a successful attempt. This does not make logical sense since claim 1 states the voice recognition failure when the compared result is below the reference value and the voice recognition success when the compared result is at least the reference value. Still further, claim 1 clearly states to "perform the command corresponding to the recognized word." The comments in the Advisory Action dated July 7, 2005 also does not address this feature since the cited section relates to a different

process of Ittycheriah (i.e., does not occur with regard to the enroll process, the update process and/or the update grammar creation process). Thus, the Office Action fails to make a prima facie case of obviousness and the outstanding rejection should be withdrawn.

Additionally, Ittycheriah relates to a voice recognition system in which the disclosed arrangements attempt to prevent the entry of confusingly similar phrases in a vocabulary list. Cited sections of Ittycheriah relate to an updating process (of a list of phrases such the name "Bob Johnson"). If an alleged voice recognition success is determined such as the YES branch of block 38 (FIG. 3), then the user is instructed that a similar phrase exists on the list and the user is provided with instructions. See block 42. This does not teach or suggest "to report a voice recognition success and perform the command corresponding to the recognized word" as recited in independent claim 1. Rather, Ittycheriah's alleged success actually is an indication that a similarly confusing phrase may be on the list. This differs from the present application in which a voice recognition success allows a command to be executed (to carry out the recognized command). The determination of a confusingly similar phrase in Ittycheriah means that other events are performed by the user so as to determine which phrase should be "on the list." Applicant respectfully submit that the cited section of Ittycheriah relates to an updating process and does not relate to a determination of a voice recognition success and the performance of a command corresponding to the recognized word. Netsch teaches producing an updated set of speech reference models

at col. 4, lines 64-68. However, this does not teach or suggest “to report a voice recognition success and perform the command corresponding to the recognized word”.

For at least the reasons set forth above, the applied references of Ittycheriah and Netsch do not teach or suggest all the features of independent claim 1. Therefore, independent claim 1 defines patentable subject matter.

Dependent Claim 18

Dependent claim 18 depends from claim 1 and therefore defines patentable subject matter at least for that reason. However dependent claim 18 contains additional features such that dependent claim 18 does not stand or fall together with independent claim 1. For example, dependent claim 18 recites performing the command begins at least prior to modifying the reference voice model.

Applicant has shown above that Ittycheriah does not suggest the claimed performing the command corresponding to the recognized word when the compared result is at least the reference value. Additionally, Ittycheriah and Netsch clearly do not relate to performing the command prior to modifying a reference voice model. This is an additional feature of claim 18 that is not taught or suggested by the applied references.

The Office Action appears to cite Ittycheriah’s col. 3, lines 30-35 for these features. However, as discussed above, this section of Ittycheriah is a different voice recognition mode (or operation) than the update and enroll processes described in Ittycheriah. Dependent claim 18 (and base claim 1) relate to specific features based on a comparison (i.e., when the compared result is at least the reference value). In other words, the

features of claim 18 follow in a specific order that is not recognized by separate modes of operation as in Ittycheriah. Thus, dependent claim 18 defines patentable subject matter at least for this additional reason.

In addressing claim 18, the Office Action alleges Ittycheriah's col. 3, lines 30-35 teaches "command performance prior to modification." The Office Action states that this occurs when there is no problem with the input speech. Applicant believes that the Patent Office is asserting that command performance occurs "when there is no other confusingly similar words in the list." However, claim 1 (from which claim 18 depends) recites "to report a voice recognition success and perform the command corresponding to the recognized word when the compared result is at least the reference value" and claim 18 recites "performing the command begins at least prior to modifying the reference voice model." Ittycheriah does not suggest in any way to "determine a confusingly similar phrase on the list" and to perform a command corresponding to "the confusingly similar phrase" prior to updating the list. In other words, when Ittycheriah allegedly obtains a success (block 42 in FIG. 3), there is no "perform the command corresponding to the recognized word."

The Office Action references another section of Ittycheriah (i.e., col. 3, lines 32-35) and attempts to combine that section with Ittycheriah's updating process (i.e., FIG. 3). There is no suggestion to modify Ittycheriah's update process since modifying FIG. 3 as alleged in the Office Action (with respect to claims 18) destroys the express purpose of Ittycheriah, which is to prevent the entry of confusingly similar phrases in a list. See the Abstract, lines 1-2; and col. 3, lines 45-48. Ittycheriah and Netsch do not teach or suggest

these features of dependent claim 18 in combination with the other features of corresponding independent claim 1. Thus, dependent claim 18 defines patentable subject matter at least for this additional reason.

Independent Claim 3

Independent claim 3 recites performing an operation based on the received voice data and associated with the reference voice model upon success of the voice detection and updating the reference voice model using the voice data received from the user upon a judged success of the voice detection. Ittycheriah and Netsch do not teach or suggest these features for at least the reasons set forth above, especially with respect to independent claim 1. However applicant respectfully notes that claim 3 includes different claim language that should be considered when determining patentability of the claims. Applicant respectfully notes that the Office Action has not addressed independent claim 3 differently than independent claim 1. However, applicant firmly believes that claim 3 stands or falls differently than the other claims including independent claim 1.

In particular, applicant notes that independent claim 3 recites comparing the detected characteristics with a previously established reference voice model to judge success or failure of the voice detection. Claim 3 explicitly recites “performing an operation based on the received voice data and associated with the reference voice model upon success of the voice detection” as well as updating the reference voice model using the voice data received from the user upon a judged success of the voice detection. Thus, the performing the operation corresponds to upon success of the voice detection. Ittycheriah's

features at col. 3, lines 28-35 do not relate to upon success of the voice detection (as recited in another feature of the claim).

Stated further, Ittycheriah does not suggest these features that occur upon a [judged] success of the voice detection. Rather, Ittycheriah in the update process, the enroll process and/or the update grammar creation process does not perform an operation based on the received voice data and associated with the reference voice data. Netsch does not teach or suggest the missing features of independent claim 3. Accordingly, independent claim 3 defines patentable subject matter at least for this reason.

Dependent Claim 19

Dependent claim 19 depends from claim 3 and therefore defines patentable subject matter at least for this reason. However, dependent claim 19 contains additional features such that dependent claim 19 does not stand or fall together with independent claim 3. For example, dependent claim 19 recites that performing the operation associated with the reference voice model comprises performing a command associated with the detected characteristics of voice data when the comparing is successful. For at least the reasons set forth above, Ittycheriah does not suggest performing a command associated with detected characteristics of voice data when the comparing is successful. Applicant respectfully notes that claim 19 specifically relates to “when the comparing is successful.” Thus, Ittycheriah’s col. 3, lines 28-35 does not suggest this feature as it is not a result of when the comparing is successful. Again, the comparing relates to specific features of claim 3 that are not suggested by Ittycheriah’s col. 3, lines 28-35. The asserted

combination therefore does not teach or suggest all the features of dependent claim 19, especially in combination with the other features of independent claim 3.

Dependent Claim 20

Dependent claim 20 depends from claim 3 and therefore defines patentable subject matter at least for this reason. However, dependent claim 20 contains additional features such that dependent claim 20 does not stand or fall together with independent claim 3 and/or dependent claim 19. Additionally, dependent claim 20 recites that the command corresponds to a recognized word of the voice data from the user. Ittycheriah and Netsch do not teach or suggest these additional features, especially in combination with other features of dependent claim 19 and independent claim 3. The asserted combination therefore does not teach or suggest all the features of dependent claim 20, especially in combination with the other features of independent claim 3 and dependent claim 19. Thus, dependent claim 20 defines patentable subject matter at least for this additional reason.

Dependent Claim 21

Dependent claim 21 depends from claim 3 and therefore defines patentable subject matter at least for this reason. However, dependent claim 21 contains additional features such that dependent claim 21 does not stand or fall together with independent claim 3 and/or dependent claims 19-20. Dependent claim 21 recites performing the command corresponding to the recognized word of the voice data from the user begins at least prior to updating the reference voice model. Ittycheriah and Netsch do not teach or suggest these features. The asserted combination therefore does not teach or suggest all the

features of dependent claim 21, especially in combination with the other features of independent claim 3 and dependent claims 19-20. Thus, dependent claim 21 defines patentable subject matter at least for this additional reason.

Independent Claim 7

Independent claim 7 recites determining if the voice data from the user corresponds to the reference voice model; executing a command associated with the reference voice model upon a positive correspondence of the reference voice model and the voice data from the user; and updating the reference voice model using the voice data from the user, upon the positive correspondence of the reference voice model and the voice data from the user.

Ittycheriah and Netsch do not teach or suggest these features for at least the reasons set for the above, especially with respect to independent claim 1. However applicant respectfully notes that claim 7 includes different claim language that should be considered when determining patentability of the claims. Applicant respectfully notes that the Office Action has not addressed independent claim 7 differently than independent claim 1. However, applicant firmly believes that claim 7 stands or falls differently than the other claims including independent claim 1.

In particular, applicant notes that claim 7 explicitly recites “executing a command associated with the reference voice model upon a positive correspondence of the reference voice model and the voice data from the user.” Thus, executing the command corresponds to a positive correspondence of the reference voice model and the voice data

from the user. Ittycheriah's features at col. 3, lines 28-35 do not relate to a positive correspondence of the reference voice model and the voice data from the user (as recited in another feature of the claim). The positive correspondence relates to specific features of claim 7 that are not suggested by Ittycheriah's col. 3, lines 28-35.

Ittycheriah and Netsch do not teach or suggest the features of independent claim 7. Accordingly, independent claim 7 defines patentable subject matter at least for this reason.

Dependent Claim 22

Dependent claim 22 depends from claim 7 and therefore defines patentable subject matter at least for this reason. However, dependent claim 22 contains additional features such that dependent claim 22 does not stand or fall together with independent claim 7. Additionally, dependent claim 22 recites that the command corresponds to a recognized word of the voice data from the user. Ittycheriah and Netsch do not teach or suggest these features. The asserted combination therefore does not teach or suggest all the features of dependent claim 22, especially in combination with the other features of independent claim 7.

Dependent Claim 23

Dependent claim 23 depends from claim 7 and therefore defines patentable subject matter at least for this reason. However, dependent claim 23 contains additional features such that dependent claim 23 does not stand or fall together with independent claim 7 and/or dependent claim 22. Dependent claim 23 recites executing the command corresponding to the recognized word of the voice data from the user begins at least prior

to updating the reference voice model. Ittycheriah and Netsch do not teach or suggest these features. The asserted combination therefore does not teach or suggest all the features of dependent claim 23, especially in combination with the other features of independent claim 7 and dependent claim 22. Thus, dependent claim 23 defines patentable subject matter at least for this additional reason.

Independent Claim 24

Independent claim 24 recites comparing the characteristics of the detected user voice with characteristics of a previously obtained reference voice model to retrieve a word having the largest similarity; performing a command based on the received user voice and corresponding to the retrieved word when the compared result is at least a reference value; and modifying the reference voice model based on the characteristics of the user voice.

Ittycheriah and Netsch do not teach or suggest these features for at least the reasons set for the above, especially with respect to claim 1. However applicant respectfully notes that claim 24 includes different claim language that should be considered when determining patentability of the claims. Applicant respectfully notes that the Office Action has not addressed independent claim 24 differently than independent claim 1. However, applicant firmly believes that claim 24 stands or falls differently than the other claims including independent claim 1.

Claim 24 explicitly recites “performing a command based on the received user voice and corresponding to the retrieved word when the compared result is at least a reference value.” Thus, performing the command corresponds to when the compared result is at

least a reference value. Ittycheriah's features at col. 3, lines 28-35 do not relate to a compared result is at least a reference value (as recited in another feature of the claim). The compared result relates to specific features of claim 24 that are not suggested by Ittycheriah's col. 3, lines 28-35.

Ittycheriah and Netsch do not teach or suggest the features of independent claim 24. Accordingly, independent claim 24 defines patentable subject matter at least for this reason.

Dependent Claim 26

Dependent claim 26 depends from claim 24 and therefore defines patentable subject matter at least for this reason. However, dependent claim 26 contains additional features such that dependent claim 26 does not stand or fall together with independent claim 24. For example, dependent claim 26 recites reporting a voice recognition failure when the compared result is below the reference value. Ittycheriah and Netsch do not teach or suggest this feature as they do not relate to "when the compared result is below the reference value." The asserted combination therefore does not teach or suggest all the features of dependent claim 26, especially in combination with the other features of independent claim 24. Thus, dependent claim 26 defines patentable subject matter at least for this additional reason.

Dependent Claim 27

Dependent claim 27 depends from claim 24 and therefore defines patentable subject matter at least for this reason. However, dependent claim 27 contains additional

features such that dependent claim 27 does not stand or fall together with independent claim 24. Dependent claim 27 recites performing the command based on the received user voice begins at least prior to updating the reference voice model. Ittycheriah and Netsch do not teach or suggest these features. The asserted combination therefore does not teach or suggest all the features of dependent claim 27, especially in combination with the other features of independent claim 24. Thus, dependent claim 27 defines patentable subject matter at least for this additional reason.

Remaining Claims

All the independent claims 1, 3, 7 and 24 are believed to define patentable subject matter as discussed above. Each of the dependent claims depends from one of the independent claims and therefore defines patentable subject matter at least for this additional reason. In addition, the dependent claims recite features that further and independently distinguish over the applied references. Applicant respectfully submits that the other remaining claims each stand and fall separately from the respective claims from which they depend.

CLAIM APPENDIX

The attached Appendix contains a copy of the claims involved in the appeal.



Serial No.: 09/729,768

Docket No.: HI-0029

EVIDENCE APPENDIX

Applicant has not provided any evidence with this appeal and therefore an Evidence Appendix is not provided.

RELATED PROCEEDINGS APPENDIX

Applicant is not providing copies of related decisions and therefore a Related Proceeding Appendix is not provided.

CONCLUSION

It is respectfully submitted that the above arguments show that each of claims 1-5, 7-16 and 18-27 are patentable over the applied references. Based at least on these reasons, it is respectfully submitted that each of claims 1-5, 7-16 and 18-27 defines patentable subject matter. Applicant respectfully requests that the rejection of claims 1-5, 7-16 and 18-27 set forth in the February 7 Office Action be withdrawn.

Respectfully submitted,
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APPENDIX

1. A method for increasing voice recognition rate in a voice recognition system comprising:

establishing a reference model for user voices subjected to recognition;

receiving the user voices for voice recognition commands;

detecting the range and characteristics of the received voice data;

comparing the range and characteristics of the detected voice data with the characteristics of the previously obtained reference voice model to retrieve a word having the largest similarity;

comparing the similarity of the retrieved word with the similarity reference value to report a voice recognition failure when the compared result is below the reference value, and to report a voice recognition success and perform the command corresponding to the recognized word when the compared result is at least the reference value; and

modifying the reference voice model based on the characteristics of the voice data which succeeded in the voice recognition.

2. The method of claim 1, wherein the characteristics of the voice data are expressed in characteristic vectors which are applied with entering patterns including at least one of LPC (Linear Predictive Coding) coefficient, cepstrum and differential cepstrum coefficient.

3. A method for increasing voice recognition rate in a voice recognition system comprising:

detecting the characteristics of voice data received from a user;

comparing the detected characteristics with a previously established reference voice model to judge success or failure of the voice detection;

performing an operation based on the received voice data and associated with the reference voice model upon success of the voice detection; and

updating the reference voice model using the voice data received from the user upon a judged success of the voice detection.

4. The method of claim 3, wherein the characteristics of the voice data are expressed in vectors.

5. The method of claim 4, wherein the vectors are determined using at least one of Linear Predictive Coding (LPC) coefficient, cepstrum and differential cepstrum coefficient.

7. A voice recognition method comprising:
comparing voice data from a user with a reference voice model of previously entered voice data.
determining if the voice data from the user corresponds to the reference voice model;
executing a command associated with the reference voice model upon a positive correspondence of the reference voice model and the voice data from the user;
and
updating the reference voice model using the voice data from the user, upon the positive correspondence of the reference voice model and the voice data from the user.
8. The method of claim 7, wherein the voice model comprises voice data expressed in vectors.
9. The method of claim 8, wherein the vectors are determined using at least one of Linear Predictive Coding (LPC) coefficient, cepstrum and differential cepstrum coefficient.
10. The method of claim 8, wherein updating the reference voice model comprises:
generating vectors representing the voice data from the user;

combining the vectors representing the voice data from the user with the vectors of the voice model, thereby updating the voice model.

11. The method of claim 7, wherein determining if the voice data from the user corresponds to the reference voice model comprises:

comparing a similarity of the voice data from the user to the reference voice model; and

indicating the positive correspondence if the similarity is greater than or equal to a reference value.

12. The method of claim 11, wherein comparing the similarity comprises:

comparing similarity of the voice data from the user to a plurality of reference voice models of a plurality of previously entered voice data; and

selecting the reference voice model that has the largest similarity.

13. The method of claim 11, further comprising:

indicating a recognition failure if the similarity is less than the reference value.

14. The method of claim 7, further comprising:
indicating the positive correspondence of the reference voice model and the voice data from the user.
15. The method of claim 7, wherein the voice data from the user represents at least one of a word, a phrase, and a command.
16. The method of claim 7, wherein the reference voice model is associated with at least one of a word, a phrase, and a command.
18. The method of claim 1, wherein performing the command begins at least prior to modifying the reference voice model.
19. The method of claim 3, wherein performing the operation associated with the reference voice model comprises performing a command associated with the detected characteristics of voice data when the comparing is successful.
20. The method of claim 19, wherein the command corresponds to a recognized word of the voice data from the user.

21. The method of claim 20, wherein performing the command corresponding to the recognized word of the voice data from the user begins at least prior to updating the reference voice model.

22. The method of claim 7, wherein the command corresponds to a recognized word of the voice data from the user.

23. The method of claim 22, wherein executing the command corresponding to the recognized word of the voice data from the user begins at least prior to updating the reference voice model.

24. A voice recognition method comprising:
receiving a user voice representative of a voice recognition command;
detecting characteristics of the received user voice;
comparing the characteristics of the detected user voice with characteristics of a previously obtained reference voice model to retrieve a word having the largest similarity;
performing a command based on the received user voice and corresponding to the retrieved word when the compared result is at least a reference value; and
modifying the reference voice model based on the characteristics of the user voice.

25. The method of claim 24, wherein the characteristics of the user voice are expressed in characteristic vectors that are applied with patterns including at least one of LPC (Linear Predictive Coding) coefficient, cepstrum and differential cepstrum coefficient.

26. The method of claim 24, further comprising reporting a voice recognition failure when the compared result is below the reference value.

27. The method of claim 24, wherein performing the command based on the received user voice begins at least prior to modifying the reference voice model.